

Remarks

A. Claims

Claims 1-14 are pending. Claims 4-7 are withdrawn. Claims 1-3 have been amended. Claims 8-14 are new.

B. Objections

The drawings were objected to for failing to comply with 37 CFR 1.84(p)(4) and 1.84(p)(5). Applicant has amended the claims for clarification. Applicant believes no new drawings are required.

C. The Claims Are Not Indefinite Pursuant To 35 U.S.C. §112, First Paragraph

Claims 1-3 were rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement.

Claims 1-3 have been amended for clarification. Applicant submits claims 1-3 comply with the written description requirement.

D. The Claims Are Not Indefinite Pursuant To 35 U.S.C. §112, Second Paragraph

Claims 1-3 were rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claims 1-3 have been amended for clarification. Applicant submits claims 1-3 are definite.

E. The Claims Are Not Anticipated by Morrison et al. Pursuant To 35 U.S.C. §102(b)

Claims 1-3 were rejected under 35 U.S.C. §102(b) as being unpatentable over U.S. Patent No. 2,940,268 to Morrison et al. (hereinafter “Morrison”). Applicant respectfully disagrees with these rejections.

The standard for “anticipation” is one of fairly strict identity. A claim can only be anticipated if each and every element set forth in the claims is found to be either expressly or inherently described in the cited art. *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 728, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), MPEP §2131.

Amended independent claim 1 describes a combination of features of a LNG carrier that includes, but is not limited to, the feature of: “at least one of the heat exchangers is moveably fixed onboard the LNG carrier such that the at least one heat exchanger is configured to be lowered into the water for use.” Support for the amendment is found in Applicant’s specification, which states at least in part:

In addition, the heat exchanger 21, instead of being mounted in the ship, may be a separate heat exchanger 21 that is lowered into the water after the LNG vessel reaches its offshore discharge facility; or it may be a permanently submerged installation at the offshore discharge facility. By way of example, the heat exchangers may be lowered into the water using mechanical equipment. Either of these alternative heat exchanger 21 configurations is connected to the LNGC so as to allow the intermediate fluid to be circulated through the submerged heat exchanger 21.
(Specification, page 7, paragraph [0023]).

Morrison does not appear to teach or suggest the combination of features of the claim 1 including, but not limited to, the feature of: “at least one of the heat exchangers is moveably fixed onboard the LNG carrier such that the at least one heat exchanger is configured to be lowered into the water for use.” Morrison appears to teach a ship that includes a heat exchanger located on a ship and a heat exchanger located on shore. Morrison does not appear to teach that the heat exchanger on the ship can be lowered into water. Morrison states:

The pipe 34 and pump 35 discharge the liquefied gas from separator 23 for storage in tank 36 in vessel 24...

The tank contains a boiler 38 open at bottom as at 39 to the tank 37 below the liquid level 40... The port 41 may be so designed, or may be controlled by any suitable means not illustrated so that vaporization of liquefied gas by heat exchange through coils...

(Morrison, column 2, lines 30-51).

Morrison appears to teach a heat exchanger located on a pier (see Figs. 2 and 3). Referring to Fig. 2, Morrison depicts cold storage 56 positioned on wharf 4. Morrison also states:

At destination, the large amount of heat necessary to vaporize, the gas for industrials or other fuel purposes may be provided by heat exchange from cold storage changers or from other devices which require cold.

(Morrison, column 1 lines 44-48)

56 is a cold storage or cold using chamber or vessel. It contains the usual heat exchange coils or surfaces...

(Morrison, column 3, lines 9 and 10).

The combination of the features of the claim including, but not limited to, the feature of "at least one of the heat exchangers is moveably fixed onboard the LNG carrier such that the at least one heat exchanger is configured to be lowered into the water for use" does not appear to be taught or suggested by Morrison. As such, Applicant submits claims 1-3 are patentable over Morrison.

F. Double Patenting

Claims 1-3 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of copending U.S. Patent No. 6,598,408 to Nierenberg et al. Applicant respectfully requests that the request for a terminal disclaimer be held in abeyance until the above-identified application has been allowed.

G. New Claims

Claim 8 states in part, “further comprising mechanical equipment configured to lower a heat exchanger into the water.”

Claim 9 states in part, “wherein the at least one heat exchanger is configured to be rigidly attached to the LNG carrier after being lowered into the water.”

Claim 10 states in part, “wherein the at least one heat exchanger is configured to be flexibly attached to the LNG carrier after being lowered into the water.”

Claim 11 states in part, “wherein at least one of the heat exchangers is configured to be attached to a buoy.”

Claim 12 states in part, “wherein at least one of the heat exchangers is fully submerged in seawater.”

Claim 13 states in part, “wherein the intermediate fluid is a glycol.”

Claim 14 states in part, “wherein the intermediate fluid is water.”

Claim 15 states in part, “wherein the at least one heat exchanger is configured to enable heat transfer from seawater outside the hull of the carrier to the vaporizer.”

Claim 16 states in part, “wherein at least one of the heat sources comprises one or more heaters.”

Support for the new claims is found in Applicant’s Specification, which states at least in part:

As shown in FIG. 2, in one preferred embodiment of the invention, one or more submerged heat exchangers 21 are employed not to provide cooling capacity, but instead to provide heating capacity for the closed loop circulating fluid, which in turn is used to regasify the LNG.

One or more submerged heat exchanger units 21 may be located at any suitable location below the waterline of the hull 1. They may be mounted directly within the hull 1 of the LNGC, or mounted in one or more separate structures connected to the LNGC by suitable piping. For example, the submerged heat exchanger system may be mounted to the buoy that is used to moor the LNGC. Alternatively, the heat exchangers may be partially, rather than fully, submerged.

An intermediate fluid, such as glycol or fresh water, is circulated by a pump 22 through the vaporizer 23 and the submerged heat exchanger 21. Other intermediate fluids having suitable characteristics, such as acceptable heat capacity and boiling points, also may be used and are commonly known in the industry. LNG is passed into the vaporizer 23 through line 24 where it is regasified and exits through line 25.

The submerged heat exchangers 21 enable heat transfer from the surrounding seawater to the circulated intermediate fluid without the intake or pumping of sea water into the LNGC, as mentioned above. The size and surface area of the heat exchangers 21 may vary widely, depending upon the volume of LNG cargo being regasified for delivery and the temperature ranges of the water in which the LNGC makes delivery of natural gas.

(Page 5, paragraph [0018] through page 6 paragraph [0021])

In another embodiment of the system, the LNGC may be equipped with a primary heat source, and made ready for the addition of a secondary heat source by including piping and other items that otherwise could require substantial modification of the ship to accommodate. For example, the LNGC could be equipped to use steam from a boiler as the primary source of heat, but also be equipped with suitable piping and locations for pumps or other equipment to facilitate the later installation of a submerged heat exchanger system or a flow-through seawater system without requiring major structural modification of the ship itself. While this may increase the initial expense of constructing the LNGC or reduce the capacity of the LNGC slightly, it would be economically preferable to undergoing a major structural modification of the ship at a later date.

(Page 13, paragraph [0040])

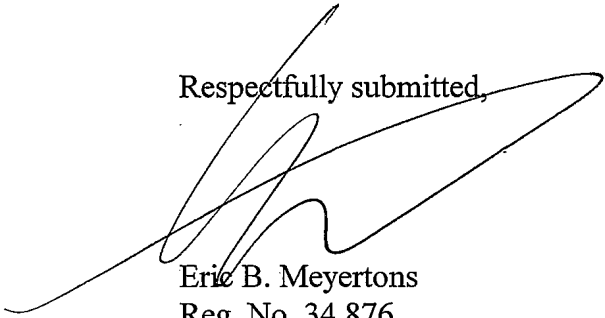
Applicant submits that the features of claims 8-16 are not taught or suggested by the cited art. As such, Applicant submits claims 8-16 are patentable over the cited art.

H. Additional Comments

Applicant believes the claims are in condition for allowance. Favorable reconsideration is respectfully requested.

If any extension of time is required, Applicant hereby requests the appropriate amount of time. If any fees are inadvertently omitted or if any additional fees are required, please charge those fees to Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C. Deposit Account No. 50-1505/6078-00100/EBM.

Respectfully submitted,



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